MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2018/2019

TOS1141 – OPERATING SYSTEMS

(All sections / Groups)

16 OCTOBER 2018
2.30 p.m. – 4.30 p.m.
(2 hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages including cover page with 5 Questions only.

2. Attempt **ALL FIVE** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please print all your answers in the Answer Booklet provided.

QUESTION 1

(a) Real Time Operating System (RTOS) is one type of Operating System (OS).

i. Define Real Time Operating System (RTOS). [3 marks]

ii. Identify the main consideration for the design of a Real Time Operating System (RTOS). [1 mark]

(b) User Interface (UI) is one of the services by Operating System (OS) that provide useful functions to the users.

i. Describe Command Line Interface (CLI). [2 marks]

ii. Describe Graphical User Interface (GUI). [2 marks]

iii. Describe Batch. [2 marks]

QUESTION 2

(a) Process scheduling can help maximize CPU usage.

i. Illustrate all processes' states and the changes from one state to another state. [3 marks]

ii. Differentiate between short term scheduler and long term scheduler. [2 marks]

(b) Critical Section is one major problem in Operating System. Explain how the mechanism works? [3 marks]

(c) One of the solutions to the Critical Section problem is using Semaphores. Explain the standard atomic operations `wait()` and `signal()` to solve the problem. [2 marks]

Continued ....

QUESTION 3

Consider the following processes with the length of a CPU burst time given in milliseconds and the arrival times as in Table 1 below:

Table 1

Process	Arrival Time	Priority	Burst Time
P0	0	3	7
P1	0	2	6
P2	3	2	2
P3	4	1	8
P4	7	4	2

(a) Draw a Gantt Chart illustrating the execution of those processes using Preemptive Shortest Job First (PSJF) scheduling. Calculate the average waiting time for each process. [4 marks]

(b) Draw a Gantt Chart illustrating the execution of those processes using Round Robin scheduling with quantum size of 3. Calculate the average waiting time for each process. [4 marks]

(c) Illustrate a multilevel feedback queue that can combine the benefits of Round Robin (RR) and Preemptive Shortest Job First (PSJF). [2 marks]

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QUESTION 4

Consider the following snapshot of a system with FIVE processes (*P0, P1, P2, P3, P4)* and FOUR resource types (*A, B, C, D*):

Table 2

	Allocation				**Max**				**Available**			
	A	*B*	*C*	*D*	*A*	*B*	*C*	*D*	*A*	*B*	*C*	*D*
P0	0	1	2	3	0	1	2	3	0	2	2	0
P1	1	0	0	0	1	6	3	2				
P2	1	4	8	2	2	4	8	4				
P3	0	5	0	7	0	5	2	7				
P4	0	0	1	3	0	5	3	6				

Answer the following questions [using the **Banker's Algorithm**].

a) Identify the total amount of instances for each resource *A, B, C,* and *D.* [2 marks]

b) Construct the ***Need*** matrix. [2 marks]

c) Demonstrate all the steps required to show whether the system is in a safe state or not [using the Banker's Algorithm]. Show all the required steps. [3 marks]

d) Assume that P1 request for additional (0,2,2,0) resources, can the request be granted immediately? Justify the answer by showing all the required steps. [3 marks]

QUESTION 5

a) Explain **ONE (1)** problem that could occur if a system allowed a file system to be mounted simultaneously at more than one location. [1 mark]

b) There are three most popular file allocation strategies in operating system, which are contiguous, linked, and indexed allocation. Discuss the differences of the strategies in terms of file size and access method. [3 marks]

c) Given a disk with sector numbered from 0 until 199, and a request queue: 100, 160, 30, 120, 10, 130, 60, 80, 180, 150. Assume that the head pointer is at sector 50. Illustrate the following disk scheduling algorithms and calculate the amount of head movement:

   a. First-come-first-serve (FCFS) [3 marks]
   b. Shortest-seek-time-first (SSTF) [3 marks]

End of Paper.

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TRIMESTER 1, 2018/2019

TME 3221 – MARKETING AND E-COMMERCE

(All sections / Groups)

16 OCTOBER 2018
2.30 p.m. - 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages excluding cover page with 5 Questions only.

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QUESTION 1

a. Explain the major impacts of technology in traditional marketing. (2 marks)

b. Explain the change of traditional marketing with the use of technology. (3 marks)

c. Explain any **FIVE (5)** marketing functions based on **ONE (1)** example. Use the same example for all the functions. (5 marks)

QUESTION 2

Consider the following article for Question 2.

Brent Walker, vice president and CMO at C2B Solutions, says the distinguishing feature of C2B is that customers bring value to the company. "This could involve consumers co-creating ideas, product/service concepts and solutions with a company through social media. C2B can also mean that a business brings consumer insights and consumer-centric solutions to another business as its primary service or value-added offering," Walker told Business News Daily.

C2B business models include reverse auctions, in which customers name the price for a product or service they wish to buy. Another form of C2B occurs when a consumer provides a business with a fee-based opportunity to market the business's products on the consumer's blog. For example, food companies may ask food bloggers to include a new product in a recipe, and review it for readers of their blogs. YouTube reviews may be incentivised by free products or direct payment. This could also include paid advertisement space on the consumer website. Google Adwords/Adsense has enabled this kind of relationship by simplifying the process in which bloggers can be paid for ads. Services such as Amazon Affiliates allow website owners to earn money by linking to a product for sale on Amazon.

The C2B model has flourished in the Internet age because of ready access to consumers who are "plugged in" to brands. Where the business relationship was once strictly one-directional, with companies pushing services and goods to consumers, the new bi-directional network has allowed consumers to become their own businesses. Decreases in the cost of technologies such as video cameras, high-quality printers and Web development services give consumers access to tools for promotion and communication that were once limited to large companies. As a result, both consumers and businesses can benefit from the C2B model.

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For the C2B relationship to be fulfilled, the participants must be clearly defined. The consumer could be any individual who has something to offer a business, either a service or a good. Examples could be a blogger, as mentioned before, or a photographer offering stock images to businesses. The consumer could also be someone answering a poll through a survey site, or offering job-hiring services by referring someone through referral hiring sites such as elance.com.

The business in this model could be any company planning to buy goods or services from individuals either directly or indirectly. An intermediary would connect the business that needs a service or a good to the mass of individuals, acting as a portal both for buyers and sellers. For example, the intermediary could be a company looking to fill a job through a referral hiring site, a company seeking to advertise online through Google Adwords, or a company that needs individuals to take surveys and provide market research.

Because C2Bs are relatively new, underlying legal issues such as how to bill and receive money have yet to be fully sorted out. A traditional firm would pay wages to a limited group of employees, but C2B businesses could potentially have to process thousands of customer payments. Fortunately, intermediaries often take care of the financial and legal aspects of C2B transactions. Services like PayPal and Google Wallet ease the burden of payment, and Google Adsense pays webmasters by sending them checks in dollars, incurring shipping fees for Google and currency conversion fees for international users.

Growing your C2B business requires dedication and a few special skills. "B2B typically relies on its sales function and account management team to establish and strengthen customer/client relationships," Walker said.

According to Walker, companies interested in extending their models to reach a C2B audience should consider the following marketing tools:

- Market research (quantitative surveys, qualitative interviews, segmentation).
- Consumer feedback channels, such as rating and reviews, customer service lines, avenues for suggestions/comments.
- Social media, such as online consumer user communities, Facebook pages, Twitter followings, etc.

Source: Katherine Arline, BusinessNewsDaily Contributor, January 2, 2015 10:13 am EST

a. Define ***Collaborative*** and ***Community*** with any example from the above article. (3 marks)

b. What are the **TWO (2)** suitable e-commerce models used by Google Adwords/Adsense? Give **ONE (1)** example for each model from the article. (2 marks)

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c. Propose **ONE (1)** suitable e-commerce application for Amazon and Google Adwords/Adsense. Give a reason for choosing that application. (1 mark)

d. Generate the convergence of E-Commerce using Google Adwords/Adsense. (4 marks)

QUESTION 3

a. Explain *New product lines, Innovation and Lower-cost products* of product mix. Provide one example of computer application for each of the three strategies of the Product Mix. (3 marks)

b. "Buyers and sellers know the price". Why is this an important concept for eBay? (3 marks)

c. Define promotion and state one sentence to describe promotion job in Marketing Mix. (2 marks)

d. Explain how the Internet is affecting distribution channel length. (2 marks)

QUESTION 4

a. Consider the following statements regarding ABC.com:

> ABC.com is considering to open its new variation of product. Data collection was conducted to gather marketing data to test a new product concept. Many similar products are available in the market.

a. You are the marketing manager of ABC.com. Initiate an appropriate method for this data collection task. Conclude your answer with justification. (4 marks)

b. Explain doctrine of first sale and doctrine of fair use and how should the **TWO (2)** doctrines be applied online. (4 marks)

c. Explain **TWO (2)** examples of competitor positioning used by physical product and software business. (2 marks)

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